



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/561,017	12/16/2005	Junichi Arami	283278US26PCT	5969
22850	7590	11/28/2008		
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER				
KACKAR, RAM N				
ART UNIT		PAPER NUMBER		
1792				
NOTIFICATION DATE		DELIVERY MODE		
11/28/2008		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com  
oblonpat@oblon.com  
jgardner@oblon.com

## Office Action Summary

**Application No.**

10/561,017

**Applicant(s)**

ARAMI, JUNICHI

**Examiner**

Ram N. Kackar

**Art Unit**

1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 September 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 4-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 4-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☐ Information Disclosure Statement(s) (PTO/SG/US)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(c), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(c) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/30/2008 has been entered.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 4, 6-8, 14, 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over to Arami et al et al. (US 5,904,872) in view of Toya et al. (US 6,407,371).**

Arami et al et al teach a mounting table 1 comprising a heating unit including a reflector plate 21 made of an opaque quartz, a mounting table cover member 11 installed to cover the whole heating unit, and a target object being mounted thereon, wherein the mounting table cover member is made of a light absorbing material. (See, for example, Fig. 1-4).

Arami et al do not teach a quartz tube welded to a surface of the reflector plate, wherein a carbon wire which generates heat when a current is applied thereto is inserted in the quartz tube.

Toya teaches a quartz tube welded or fused to a surface of the reflector plate, wherein a carbon wire which generates heat when a current is applied thereto is inserted in the quartz tube. (See, for example, Fig. 13, 14). Toya teaches numerous examples of fusion of quartz or glass (Col 3 lines 41-67, Fig 12, Col 14 lines 42-65).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use a carbon wire and quartz tube heater as the heater in Arami et al.

The suggestion/motivation would have been that carbon wires eliminate the contamination associated with metallic heating elements. (See, for example, Toya, col. 1, lines 4-55).

For claim 6, Arami et al teach a mounting table 1 including a heating unit having a reflector plate 21 made of an opaque quartz, a mounting table cover member 11 installed to cover the whole heating unit, a target object being mounted thereon, wherein the mounting table cover member is made of a light absorbing material; a processing chamber 41 accommodating therein the mounting table 1; a gas supply unit 45 for supplying a gas in the processing chamber; and a vacuum pumping system 50 for evacuating the processing chamber.

Arami et al do not teach a quartz tube welded to a surface of the reflector plate, wherein a carbon wire which generates heat when a current is applied thereto is inserted in the quartz tube.

Toya teaches a quartz tube welded to a surface of the reflector plate, wherein a carbon wire which generates heat when a current is applied thereto is inserted in the quartz tube. (See, for example, Fig. 13, 14).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use a carbon wire and quartz tube heater as the heater in Arami et al.

The suggestion/motivation would have been that carbon wires eliminate the contamination associated with metallic heating elements. (See, for example, Toya, col. 1, lines 4-55).

For claims 7 and 14, Toya teaches that the quartz tube is bent. (See, for example, Fig. 13-15).

Regarding claim 8 and 15, Toya teaches that the quartz tube is divided and welded to a plurality of zones on the surface of the reflector plate. (See, for example, Fig. 15).

Regarding claim 17 the limitation of joint pins appears to be a spot weld joint. This type of joint is disclosed by Toya et al (Col 9 lines 47-49).

3. **Claims 4, 6-15, 17, 19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over to Arami et al et al. (US 5,904,872) in view of Saito et al (US 6,369,361).**

Arami et al et al teach a mounting table 1 comprising a heating unit including a reflector plate 21 made of an opaque quartz, a mounting table cover member 11 installed to cover the whole heating unit, and a target object being mounted thereon, wherein the mounting table cover member is made of a light absorbing material. (See, for example, Fig. 1-4).

Arami et al do not teach a quartz tube welded to a surface of the reflector plate, wherein a carbon wire which generates heat when a current is applied thereto is inserted in the quartz tube.

Saito et al teach a mounting table 11 on which a target object is mounted; a processing chamber accommodating therein the mounting table; a gas supply unit 24 for supplying a gas in the processing chamber; a vacuum pumping system 25 for evacuating the inside of the

processing chamber; a target object heating unit 60 for heating the target object; an inner vessel 1 installed in the processing chamber;

a heating unit 40, installed between the inner vessel and an inner wall of the processing chamber, for heating the inner vessel, wherein the inner vessel is made of a light absorbing material, and the heating unit includes a reflector plate 3, and a quartz tube 4 welded to a surface of the reflector plate, a carbon wire which generates heat when a current is applied thereto being inserted in the quartz tube. (See, for example, Fig. 1-3 and Col 5 lines 6-18).

Saito et al teach a quartz tube welded to a surface of the reflector plate (Col 6 lines 31-42 and Figs 3A and 3B).

Therefore it would have been obvious to a person of ordinary skill in the art at the time of the invention to use a carbon wire and quartz tube heater as the heater in Arami et al and to weld or fuse it to a reflector plate to eliminate the contamination associated with metallic heating elements. (See, for example, Toya, col. 1, lines 4-55).

For claim 6, Arami et al teach a mounting table 1 including a heating unit having a reflector plate 21 made of an opaque quartz, a mounting table cover member 11 installed to cover the whole heating unit, a target object being mounted thereon, wherein the mounting table cover member is made of a light absorbing material; a processing chamber 41 accommodating therein the mounting table 1; a gas supply unit 45 for supplying a gas in the processing chamber; and a vacuum pumping system 50 for evacuating the processing chamber.

For claim 11, Arami et al teach a target object heating unit that is integrally embedded in the mounting table. (See, for example, Fig. 1-4).

For claims 7, 12-14 Saito teaches the quartz tube is bent, divided, and welded to a plurality of zones on the surface of the reflective plate. (See, for example, Fig. 3A and 8).

Regarding claim 19 it is obvious to have reflecting surface all around including the ceiling.

Regarding claim 21 the limitation of joint pins appears to be a spot weld joint. This type of joint is only a welding joint as disclosed above and therefore obvious.

**4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Arami et al and Toya as applied to claim 4 above, and further in view of Goela et al (US 5,612,132).**

Arami et al teach a mounting table cover member made of silica. (See, for example, col. 2, lines 15-16).

Neither Arami et al nor Toya teach that the mounting table cover member is SiC.

Goela et al teach that SiC is a light-absorbing material. (See, for example, col. 1, lines 32-35).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to form the mounting table cover member from SiC.

The suggestion/motivation would have been both silica and SiC are light-absorbing materials.

**5. Claim 10 is also rejected under 35 U.S.C. 103(a) as being unpatentable over US Saito and Arami et al as applied to claim 9 above, and further in view of Goela.**

Saito et al teach that the inner vessel is made of quartz. (See, for example, Fig. 1).

Neither Saito et al nor Arami et al teach that the inner vessel is made of SiC.

Goela teaches that SiC is a light-absorbing material. (See, for example, col. 1, lines 32-35).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to form the inner vessel from SiC.

The suggestion/motivation would have been both quartz and SiC are light-absorbing materials.

**6. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over to Arami et al. (US 5,904,872) in view of Toya et al. (US 6,407,371) as applied to claims 4, 6-8, 14, 15 and 17 and further in view of Ichiro Takahashi (US 6254687).**

Claim 16 pertains to assembly of the heater parts with a cover at the top, which cover is positioned in proper alignment to the reflector plate. This is only a proper assembly and well within the capability of one of ordinary skill in the art at the time of invention.

However such examples exist in the prior art. For example Ichiro Takahashi discloses a positioning projection (Fig 1) provided in an upper direction at a peripheral region of the reflector plate and positions the mounting table cover member (16) which is inserted by the positioning projection.

Therefore having a cover positioned in a well known type of assembly for heater would have been obvious for one of ordinary skill in the art at the time of invention.



**7. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over to Arami et al et al. (US 5,904,872) in view of Toya et al. (US 6,407,371) as applied to claims 4, 6-8, 14, 15 and 17 and further in view of Tay et al (US 2003/0094446).**

Arami et al et al in view of Toya et al do not disclose lower half portion of the quartz tube being opaque quartz, and an upper half portion of the quartz tube is transparent quartz.

Tay et al disclose half part of the heating tube lined with reflecting coating (Fig 4 106 or Fig 5 108).

Therefore it would have been obvious for one of ordinary skill in the art at the time of invention to have half portion of heating tubes welded to reflector plate made of opaque quartz as the reflector plate in Arami et al, in order to have heat concentrated on the substrate.

**8. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Arami et al (US 5,904,872) in view of Saito et al (US 6,369,361) as applied to claims 19 and further in view of Tay et al (US 2003/0094446).**

Arami et al and Saito et al do not disclose lower half portion of the quartz tube being opaque quartz, and an upper half portion of the quartz tube is transparent quartz.

Tay et al disclose half part of the heating tube lined with reflecting coating (Fig 4 106 or Fig 5 108).

Therefore it would have been obvious for one of ordinary skill in the art at the time of invention to have half portion of heating tubes welded to reflector plate made of opaque quartz as the reflector plate in Arami et al, in order to have heat concentrated on the substrate.

***Response to Arguments***

Applicant's arguments filed 9/30/2008 have been fully considered but they are not persuasive.

Applicant argues that any welding of the quartz parts in Toya et al is directed to the disposal of heating filament wires in a quartz encapsulation. There is no suggestion in any welding of the quartz parts in Toya et al is directed to the disposal of heating filament wires in a quartz encapsulation. There is no suggestion in Toya et al of the quartz structures therein being welded to any external structure of the quartz structures therein being welded to any external structure.

In response it is noted that Toya et al teach welding or fusing of different quartz and/or glass structures (See Fig 12 and its description). Further tube type of heaters as claimed are disclosed welded in Saito et al also.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N. Kackar whose telephone number is 571 272 1436. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571 272 1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1792

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ram N Kackar/

Primary Examiner, Art Unit 1792